

ABSTRACT  
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IRRADIATION AS AN ALTERNATIVE QUARANTINE TREATMENT  
TO METHYL BROMIDE FOR BLUEBERRIES

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Fresh market blueberries produced in the U.S. and shipped to certain western states in the U.S. and some export markets must be certified to be free of certain quarantined insects. Methyl bromide (MB) is the only approved quarantine treatment for blueberries for security against the apple maggot, *Rhagoletis pomonella* (Walsh), blueberry maggot, *R. mendax* Curran, and plum curculio, *Conotrachelus nenuphar* (Herbst). The continued use of MB after 2000 is uncertain. The postharvest quality of two blueberry cultivars, 'Climax' (*Vaccinium ashei* Reade) and 'Sharpblue' (a southern highbush hybrid of complex parentage), was evaluated after treatment with gamma or electron beam irradiation at incremental dosages to 1.25 kGy and after subsequent 1C storage for various durations. Peel color, total soluble solids, titratable acidity, weight loss, and decay were not affected by dosage. Firmness of 'Climax' berries significantly declined as dosage increased, whereas the 'Sharpblue' berries did not soften at dosages to 1.0 kGy. Flavor and texture indices of both cultivars declined slightly as dosage increased. In general, our findings indicate dosages at 0.75 kGy or below are not detrimental to the postharvest quality of these two cultivars. Provided that probit 9 security against blueberry pests can be obtained at or less than 0.75 kGy, irradiation can be an effective alternative treatment for MB.